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Cooperation at the University of Minnesota

by

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Studying the University's Problems

AS THE American university has grown in size and in diversity of function it has seemed necessary to provide a complex organization for its administration. Many doubts and fears concerning this organization have been entertained, both by lay observers and by participants in it, but little has been said or done to retard the extension of administrative machinery. Nor is there any present evidence, in our larger institutions at least, of a return to the simpler organization which prevailed in the days when most of us were students and when it seemed that almost the whole of the institution's activities centered in the classroom, the laboratory, and the library.

As a measure of how far we have traveled from the days when even the president of a college found time to be an instructor of students we might study the unit costs of higher education. Elliot and Stevens have recently pointed out that only about two-thirds of the income of our larger institutions is devoted to instructional activities. Under this they include salaries of instructors, supplies, equipment and repairs. In some institutions the proportion is only 60 per cent. Nor, apparently, do these figures exclude the large item of administrative duties performed by heads of departmental and college units whose functions are not discriminated in printed budgets from instructional activities. The remainder of the annual budget is devoted to overhead, physical plant, student welfare, and library service. One large university, for instance, employs a teaching staff of 1,200 persons for its 10,000 students. For the proper functioning of this teaching staff it employs more than 600 other persons on its regular payroll and about 1,000 others on intermittent service. It thus appears that for every instructor there is approximately one other person who

either directs, organizes, or serves instructional activity in some manner.

THE GROWING LOSS OF CONTACT

As the development of administrative machinery has gone forward, two things have happened. In the first place, the officers charged with the major functions of administration, usually men who were hitherto prominent as college teachers, have found it increasingly difficult to maintain the erstwhile intimate contact with the major business of education, namely, classroom instruction and scholarly research. Trapped in the interminable succession of administrative detail they find that they have neither time nor opportunity to study and understand the changing problems of students and instructors. Increasingly their contacts with student and faculty personnel, with curricula, and with the methods of instruction become more indirect and more tenuous. While their appreciations of certain phases of college education are enriched by new relations with the public and by a wider view of college and university interests, they find it increasingly difficult to apply their new insights to the intimate work of college teaching. Clothed with greater power, particularly the power of budgetary control, they may effect changes in organization and administration that indirectly modify the work of instruction. At times they may make decisions that affect educational policy in profound ways. In general, however, such changes are beneficent only to the degree that the teaching faculty are able to re-make and re-adapt their technique of teaching to the new program. At times they can do this; again they may not feel the call to do it because they look upon the new conditions as unwise if not unfair.

Augmenting the difficulty has been the injection into the administrative organization of a non-academic personnel often clothed with large administrative powers. It has been necessary and for certain purposes desirable to employ persons who have not been teachers and who are not in any sense educationists. Some of them are not even college

trained and know little or nothing about educational issues. Even in cases where they have had educational training it has often been in a field remote from that in which they must work. It often results from this situation that decisions about educational matters are made by persons little informed about the distinctly educational aspects of the issues involved, and at times unsympathetic with them.

Correlative with this growing remoteness of administrative machinery is a tendency to indifference and, at times, impatience on the part of college faculties to the consideration of matters of educational policy and administration. The source of this disinclination of college faculties to think about educational matters is not, I am convinced, based upon any real lack of interest in educational problems. It rather eventuates from a growing sense of the inconsequential character of their deliberations and decisions, and from the habits of mind which have been generated by the great specialization of knowledge in our time. Too often faculties have settled seemingly important instructional or curricular problems only to find the same problems confronting them on a later occasion and as recalcitrant as ever. They discover that forces outside the range of their own interests and knowledge have modified their decisions and rendered them futile.

THE NEED FOR RESEARCH ON UNIVERSITY PROBLEMS

It has been easy under these circumstances for misunderstanding and even suspicion to arise between the faculty and the administration, and the growing remoteness of these two agencies has not been bridged by the creation of new administrative agencies in the organization. Nor is it likely that administrative devices will provide the ground upon which these two major agents in university activity can meet with common understanding. Both for the proper functioning of the faculty and for the guidance of the administration there is needed another sort of service, a service that will enable us to substitute facts for opinion in the consideration of educational issues. For the time-honored

method of solving our problems according to Robert's Rules of Order—a method for which Dean Lyon suggests that the Rules of Hoyle or those of the Marquis of Queensbury would be equally valuable and certainly more interesting—we need to substitute the scientific method to which we give allegiance in so many fields other than education. We should place ourselves in the way of surrendering opinions and prejudices ignorantly held to factual knowledge about student intellect and character, about problems of instruction and curricula and even about matters of organization and administration itself. Upon a body of objective and verified knowledge, honest minds can meet, and while it may not be expected that all questions will soon disappear it is certain that many difficulties can be thus dispelled to the great improvement of higher education. It does not appear to the credit of colleges and universities that they have thus far lagged behind progressive public schools in this matter and certainly behind many forward-going commercial concerns. Rather is it strange that a body of men which is composed of the very apostles of the scientific and scholarly method in other fields should have done so little to apply those methods to the analysis of the work which occupies their major time.

THE COMMITTEE ON EDUCATIONAL RESEARCH

It may not now be seriously maintained that any university has solved this problem of basing the determination of its educational policy and practice upon scientific knowledge. Interesting approaches to this method of work are daily coming to light from many institutions and as a sample illustration it has been proposed that I describe certain local efforts in this direction.

The University of Minnesota Committee on Educational Research is a non-administrative body appointed by the president of the university for the purpose of studying the problems of college education in this university. Its formal reports are made directly to him. The committee is composed of fourteen members of the university faculty, eleven of whom are administrative officers.

Inasmuch as the character of the committee is indicated to some degree by its personnel and the positions which they hold in the university, it will be of interest to indicate that personnel here. The members are:

Mr. F. Bass, Professor, Municipal and Sanitary Engineering; Chairman, Department Civil Engineering; also Chairman, Education Committee of the University Senate.

Mr. G. W. Dowrie, Dean, School of Business and Professor of Economics.

Mr. G. S. Ford, Professor and Chairman, Department History; Dean, Graduate School.

Mr. E. Fraser, Professor of Law; Dean, Law School.

Mr. E. M. Freeman, Chief and Professor, Division Plant Pathology and Botany, and Dean, College of Agriculture, Forestry and Home Economics.

Mr. J. B. Johnston, Professor, Comparative Neurology, and Dean, College of Science, Literature and the Arts.

Mr. F. J. Kelly, Dean of Administration, and Director, Summer Session.

Mr. O. M. Leland, Dean, College of Engineering and Architecture, and Dean, School of Chemistry.

Mr. E. P. Lyon, Professor and Director, Department Physiology, and Dean, Medical School.

Mr. Alfred Owre, Professor and Dean, College of Dentistry.

Mr. D. G. Paterson, Professor of Psychology.

Mr. R. E. Scammon, Professor of Anatomy.

Mr. Louis B. Wilson, Director of Administration, and Professor, Pathology, Mayo Foundation.

Mr. M. E. Haggerty (Chairman), Professor, Educational Psychology, and Dean, College of Education.

It will be seen that the committee is widely representative both of subject matter divisions and of the administrative units of the university.

The committee whose activities it is my function to detail grew out of the Committee on Educational Guidance, appointed by President Coffman in 1922. The immediate objective of this committee was to study the advisability of calling a conference at the university for the consideration of the problems of the educational guidance of its students both before their entrance to the university and afterwards. In the report of the earlier committee, it was recommended that the President of the University appoint an Educational Research

Committee which shall promote the study and investigation of educational problems within the university. Such agency should not, for the present at least, have administrative functions, but should be for the purpose of investigation, experimentation, publicity, and cooperation among administrative agencies now existing. The membership of such an Educational Research Committee might well consist of administrative officers and in part of other faculty members specifically interested in the study of university education. The immediate purpose of such a research committee would be to provide a means of coordinating the research now being done by individuals now in the university, of advising in regard to the direction which research should take and the methods to be employed, and in promoting the dissemination of resulting information throughout the university.

THE METHOD OF THE COMMITTEE

Inasmuch as the Committee on Educational Research does not have any full-time personnel, it has operated much as any other university committee, through meetings, discussions and memoranda circulated among the members of the committee. It will be convenient to review the scope of the committee's activities and at the same time indicate the one special feature of its machinery by describing its subcommittees. From time to time, it has seemed wise that the work of the general committee should be carried on through subcommittees especially interested in particular research projects. Ten such subcommittees have been created for the investigation of projects which were deemed of sufficient worth to the university as a whole to warrant their investigation as university questions. For the personnel of the subcommittees it has been found desirable to go outside the membership of the general committee for the purpose of enlisting the aid of specially interested faculty members and in some cases of graduate students. Through this extension the committee has grown until it now embraces approximately forty individuals.

In some cases the investigation of the projects has gone forward through the labors of the individuals who are members of the subcommittees. In other cases it has been possible to supplement the work of these individuals by university appropriations and additional clerical staff has

been secured. In no case have these appropriations been large, however. The total amount of research money authorized thus far for all projects is $3,600.

PERSONNEL RECORDS

The first of the subcommittees to function was one created for the purpose of planning a student personnel record to be used as a basis for advice and guidance of students and for the accumulation of information to be used in later researches. This subcommittee, of which Professor Paterson is the chairman, made an extended study and analysis of personnel blanks already in use in the several colleges of the University of Minnesota and in other institutions throughout the country. On the basis of these studies the subcommittee devised a personnel record which, after much discussion by the general committee, was approved and recommended for tryout in such colleges as cared to use it. The form finally agreed upon was first used at the fall registration in 1924 in the College of Science, Literature and Arts, the College of Engineering, the College of Agriculture, Forestry and Home Economics, and College of Education.

In the use of this record it is understood that it will follow the student as he travels through the university. It can thus always be found in the office of the dean of the college in which the student is registered. As students transfer from the academic college to the professional schools the cards will follow them and become the property of the Law School, the Medical School, the College of Dentistry, or other professional school.

Thus far the use of the record is to be regarded as experimental. By its means there has been collected data on approximately ten thousand students. Beginnings have been made upon analyses of these materials and further work is in contemplation.

In the meantime the records have been widely used by individual members of the faculty, by advisers and by committees in the daily work of student consultation and direction.

EFFICIENCY OF INSTRUCTORS IN LARGE CLASSES

Like other educational institutions, the University of Minnesota has been faced not merely with an increase in its total student registration but with an irrepressible growth in the size of classes in which students must be instructed. To the minds of many college teachers this development presages a decrease in the quality of instruction and a consequent decline in the level of student work. Many of the best college instructors here and elsewhere share this view. Stimulated by this condition and encouraged by the success of certain investigations in the high school and elementary school fields in regard to the size of classes, the general committee decided to encourage a study of the problem in the University of Minnesota and created a subcommittee for that purpose. Specifically it was proposed "to study the achievements of students when instruction is given in small classes, in classes of medium size, and in classes which are large." This subcommittee, of which Professor Hudelson is the chairman and which numbered in its membership a professor of psychology, a professor of education, a professor of anatomy, the Dean of the Law School, and one graduate student in education, began its work by the preparation of a complete annotated bibliography of experimental and other studies relating to the problem. At the same time, it undertook to conduct two controlled experiments and developed a dependable technique by which experimental work could be carried on. In the meantime, the committee cast about for places where experimental work could be tried out.

The subcommittee has now surveyed the trend in size of classes in certain undergraduate courses through a six-year period. It has also studied the distribution of marks in introductory college courses over the same period, the study involving the analysis of the records in 217 large and small classes. In addition to the two controlled experiments already mentioned, there have been completed two carefully controlled experiments in the courses in contracts and in criminal law, two similar experiments in a course in education, and two others in the course in elementary psychology.

In addition to work completed, there are under way the following projects in some of which the experimental work is finished:

(*a*) General psychology, involving fifteen classes and five separate instructors.

(*b*) Introductory sociology, two class sections.

(*c*) History of education, six sections.

(*d*) Educational psychology, four sections.

(*e*) The high school, six sections.

(*f*) Mental tests, two sections.

(*g*) Mechanism of exchange (School of Business), two sections.

Other experiments are projected in economics, mathematics in the School of Engineering, sociology, American history, English, anatomy, and in a number of the courses in education. Along with the study of college courses the subcommittee has advised and encouraged two experiments of one year's duration in the departments of mathematics and English in the university high school.

It should be said that neither the subcommittee nor the general committee has been of one mind upon the desirability of large class instruction. They have been willing to submit the question to experimental study and to suspend judgment until the data are assembled and analyzed, and it is realized that a dependable conclusion requires long-continued investigation. Those of us who desire to have our faiths quickly verified have been eager for results, but all that the subcommittee has ventured to say thus far is the following cautious interpretation of experimental results to date.

Certain general tendencies seem to be emerging. It appears that the size of the classes in the courses thus far investigated has little or no effect upon results measured in terms of student achievement. What slight differences exist seem, on the whole, to be favorable to the large classes, and the method of teaching employed does not seem to affect this difference.

It may be that there are important educational outcomes accruing, or at least accruable, only from small classes which have not been detected in these experiments because no one knew how to measure them

reliably. All that can be claimed is that when measured in terms that are commonly employed in university classes, these students seemed to be unaffected by class size.

THE UNIVERSITY MARKING SYSTEM

Probably no single problem of university education has so long been studied by methods of science as has the marking system. A bibliography on this topic dates back a quarter of a century and embraces more than a hundred titles. The resistance of the problem to scientific solution is evident from the wide diversity in marking systems still in vogue in colleges throughout the land and by the insistence of the topic in both the formal and the casual discussions of faculty and students. There are faculties that still seriously discuss whether the passing mark should be 65 or 70 and individual instructors who fail students because they fall short in mathematics or chemistry by one-half of one per cent of whichever mark is agreed upon as the criterion of success.

Despite the fact that everybody understands that different college courses set tasks of differing intellectual difficulty, that some instructors are admittedly easy and others intentionally severe, we determine election to honor societies, the right to graduation and even the privilege of entering or remaining in college on the basis of the quality as well as the quantity of such marks. While all of us are perfectly aware that prevailing practice distracts many students away from genuine intellectual interests to the inaccurate and unintelligible marks which we file in the registrar's office as the measure of their success, we go on recording such marks just as if we understood what we were about and as if it were the thing to do. Probably nothing upsets the intellectual morale of a student so much as his marks just because he cannot possibly understand them. How can they be intelligible to him when they are not to the faculty who gives them? We do not even agree as to what a mark should or does measure, whether it is a criterion of achievement in a subject, docility in doing set tasks, initiative in attacking intellectual problems, industry and persistence in laborious work, native

capacity of students, or merely the ignorance, helplessness, prejudice, or mental complexes of instructors.

There is, however, no probability that colleges will abandon marking systems, nor is it claimed that the prevailing chaos warrants that extreme procedure. On the other hand, no college can entertain any very exalted opinion of its professional character as an educational institution if it rests content with present ignorance and obviously unjust practices in the matter of marks. The least it can do is persistently to analyze its procedure to see if it can discover what it really is doing, and to make its findings the common property of all its instructors. Improved schemes can hardly be inaugurated at present upon any other than an experimental basis.

In keeping with its character as a disturber of academic peace, the problem of the marking system at Minnesota thrust itself upon the attention of the committee at one of its earliest meetings. Mr. W. S. Miller, Professor of Educational Psychology in the College of Education, was made chairman of the subcommittee invited to study the matter. Through the two years of its work this subcommittee has been assisted by Mr. John Bohan, a graduate student in educational psychology, and is about to complete the report of its investigation.

The study has included a survey of marking practices in thirty-nine universities, as well as the practice in the University of Minnesota. Mr. Bohan has made the distribution of marks in the several colleges of this university during a four-year period and in particular has examined the record of the same students in the several departments in which they have studied. A special analysis of the four-year record of 1,031 freshmen who were given a psychological examination upon entrance to the university in the fall of 1921 has been made. The marks have been checked against records in objective examinations and intelligence test scores.

Some of the results of these studies are to be presented at another time during these meetings and need not be detailed here. It may be said, however, that they corroborate the

findings of numerous other studies in showing the need for improving the marking systems used in colleges, a need quite as pressing as that of improving the selection and guidance of college students.

No single investigation such as this can solve a problem as refractory and obstinate as the evaluation of scholastic achievement and we hope the beginning thus made will be extended with increasing refinement of technique and with greater applicability to practical improvements.

EXTRA-CURRICULAR ACTIVITIES

Among the problems which have become complicated with the growth of our universities is that of student participation in extra-curricular activities. About the value of these activities every sort of opinion is entertained. There are those who regard them as the most important part of college life. There are others who look upon them as mere hindrances to the legitimate ends for which colleges exist. In the absence of facts almost any view can be maintained with arguments that are convincing to the person making them. The question came to the attention of this committee through a letter from a member of the faculty, a professor of political science, referred to the committee by President Coffman. This letter outlined the situation at the university and proposed an investigation. This matter was discussed and a plan was approved by the committee which arranged for a subcommittee on extra-curricular activities of college students with the writer of the letter, Mr. Anderson, as chairman. The other members of the subcommittee were Mr. Chapin in sociology who later became chairman, and Mr. Holman in mathematics in the engineering school. Mr. Engelhardt in education later joined the group.

This subcommittee, which has now been active over a period of two years, has been aided by a graduate student in sociology and by an appropriation for expenses of the investigation. The work of the committee has followed three directions, a study of individual students, a study of alumni, and a study of campus organizations. A record of the non-

curricular activities has been secured for more than 4,600 students representing eleven colleges in the university, and for 161 campus organizations. The alumni study involves the record of participation during college, the relative achievement in after life, and the present estimate of the value of such activities. Four hundred alumni have joined in the study.

The analysis of these data is still in progress. The program includes the determination of the degree of participation by university students in all kinds of activities other than study, and the relation of class, college, sex, intelligence, high-school scholarship, college scholarship, physical condition and mental integrity to such participation. Special studies are being made of individual students, such as officers of organization and honor students.

While it is not possible here to detail the subcommittee's conclusions it may be said that after the publication of its report the discussion of extra-curricular activities of students at Minnesota will be hampered by a body of factual knowledge that will make untenable some of the opinions now widely held both by students and by faculty.

MENTAL HYGIENE OF STUDENTS

A project of the committee which has not as yet developed far is one for a thorough investigation of the problems of mental hygiene of college students. The problems of the maladjusted student have protruded themselves everywhere that personnel work has been seriously undertaken and the number, variety, and seriousness of mental hygiene cases among student groups grows as investigation proceeds. A study of these cases has been going forward at Minnesota in connection with the student health service and among the advisors of students. We have hoped that a thorough investigation of this problem could be made here and a subcommittee composed of doctors, psychiatrists, psychologists, sociologists and others has outlined an extensive program for such an investigation. This larger project has thus far been delayed owing to the lack of funds to carry

it through. Individual studies, however, are continuing with the limited facilities available.

Among other research projects to which the committee has given favorable consideration to the point of appointing subcommittees are the following:

(*a*) Alumni contacts. The purpose is to examine the best means for maintaining the *educational relationship* between a college and its graduates.

(*b*) The dissemination of research information. The proposal is to study and develop methods for keeping the university faculty informed on pertinent research in matters affecting university education.

(*c*) The vocational and educational guidance for women.

(*d*) Training for outdoor leadership.

Next to the character and interests of student personnel, the most intimate problems of university education are those of curricula and instruction. Two of the projects hitherto described, that concerning the marking system and that concerning the size of class may be thought of as falling in this field. This is also true of two others already named. A word may now be said concerning a project for which a subcommittee has just been authorized, namely, the problems of laboratory instruction.

THE EFFICIENCY OF THE LABORATORY

One of the concerns of instruction in the natural and physical sciences is that of laboratory equipment and procedure. Since Huxley made his epoch-making forensic in behalf of science, the teachers of the subject have scarcely doubted the value of elaborate buildings, equipment, specimens, materials and painstaking procedures of observation for all who would understand scientific matters. The sheer pressure of numbers in recent years has, however, distracted many able scientists from the pursuit of science itself to the elementary instruction of the growing number of freshmen and sophomore students. Year by year, it appears that increasing proportions of the personnel and support funds of science departments are being obligated to the elementary

work, and it is more than a casual fear that the methods of science instruction may curiously retard the growth of scientific knowledge. It is not an idle question, then, as to whether the growing expenditures for elementary science work are wise. Is the body of science, and is human welfare to be put forward most effectively by this method of college teaching? Is it possible that there are better ways of doing this task? Should all students who study science be required to do all the laboratory work now required? Do present methods of laboratory teaching actually produce thinking scientists?

There is no ready answer to such questions as these. Any answer we make from present knowledge will be right only accidentally, for we have little factual knowledge upon which to base judgment. We have been too busy building new laboratories and expanding elementary instruction to inquire whether the methods we have developed are the most useful. To study this question it is proposed to create a committee from among the men in the several science fields, and to associate with them one or more psychologists and students of educational research.

The agenda for this investigation is yet to be prepared, but it does not require great imagination to perceive a prospect of immense interest and usefulness opening before a committee that has the ingenuity to invent the necessary techniques for effective investigations.

Other projects in the field of instruction and curriculum are under discussion, but they have not reached the stage of formal action. It is probably true, however, that, despite the great difficulties that encompass research in this field, it is, in the long run, the most fruitful area in which the study of college problems may be prosecuted.

THE PHILOSOPHY OF THE COMMITTEE'S WORK

Although the philosophy under which the committee operates is doubtless apparent from this review of its activities, it may be useful in conclusion to restate certain of its tenets.

1. The growth of the American university has rendered more acute many of the traditional problems of college education and has created certain new problems. Concerning these problems there are both staunchly held and often diverse opinions. There is also much vagueness and doubt. About many of them there is little factual knowledge, a deficiency that makes fertile soil for the persistence of educational superstitions and vagaries. The committee believes that progress may be made and college education bettered by submitting some of these problems to scientific and experimental examination.

2. The success attending the rapidly developing methods of educational research in other fields warrants their application to the college field. It is recognized that, for the most part, the available techniques must be modified and that new ones must be invented in view of the peculiar nature of college education. Notwithstanding, ample grounds exist for believing that the problems of the college are not inscrutable by the methods of science. The genius of investigation at this time lies in the capacity to invent the methods for effective scrutiny, and, in particular, to devise procedures by which important problems may be submitted to experimental examination.

3. One of the essential conditions of much of the educational research desirable in universities is that it be widely understood and appreciated by the university faculty. One effective means for developing such understanding and appreciation is that faculty members actually participate in educational investigations and publication. The number of such persons in a university faculty whose interests and abilities enable them to engage in such activities is greater than is generally supposed, and one function of an educational research committee is to discover such persons and encourage them in such work.

4. Most of our universities are in need of developing a professional attitude toward the educational problems they confront. Many able faculty members who are professional in regard to science, to scholarship, to art, to certain select

vocations, are in reality the merest tyros in regard to education. They will toil interminably to establish with experimental proof some fact in science, and in a moment of leisure, they will turn about, and, while standing upon one foot, will settle with a wave of the hand the profoundest of educational questions. The effective antidote to such amateurishness and dilettantism in educational discussion is a body of factual knowledge and one function of our committee is to create an atmosphere that will be conducive to the serious study of university education. This it has sought to do by enlisting a large number of the faculty in its various enterprises.

FACULTY INSTRUCTION AND CONFERENCES

A significant corollary of the work of the Committee on Educational Research has been the initiation of a new type of university course for graduate students and members of the faculty. During the current year this course has been conducted as a series of conferences on problems of college education divided as follows:

Fall quarter: Problems of student personnel;
Winter quarter: Problems of college curricula and instruction;
Spring quarter: Problems of university administration.

These meetings have been weekly for two hours on Monday evenings. Thus far the course character has been kept at a minimum, although a half-dozen graduate students have done work for credit. The conference phase has been magnified in order to bring together a wide range of college instructors and through conference to develop the problems that college instructors should study.

About forty members of the university faculty have participated formally in the conference programs, and probably eighty others have taken part in the discussions. Naturally the attendance has not been uniform in numbers nor have the same individuals always been present. The average attendance for the fall and winter quarters was about forty, and more than 300 different persons have attended one or more meetings. An interesting phase of this attendance has been its representative character, coming, as it has, from

almost every college in the university and including deans and other administrative officers, as well as instructors of every rank.

The apparent success of this course for the current year, in the opinion of the Educational Research Committee, warrants its continuance. It is intended to formalize the course somewhat more than has been done during the current year and to shape it more distinctly for the needs of the younger members of the university faculty and for graduate students who are going into college teaching. The project already carries the support of the deans of the colleges and of the graduate school, and it is believed that it can be made widely useful.

THE SCHOOLMEN'S CONFERENCE

In conclusion it may be noted that the conference of superintendents and principals which the original committee was asked to consider was organized and called by the President of the University in April, 1924. It was chiefly significant because out of it came the Committee of Seven, composed of public school administrators and teachers, which has devoted two years to the study of certain university problems. Since you are to hear of the doings of this latter committee from its chairman, a discussion of its activities will be here omitted.

This review of the activities of the Committee on Educational Research should not be interpreted as implying a monopoly on the part of the Committee of Research Activities. Individuals unrelated to the committee have carried through studies that deserve equal recognition with those here described. Some of these have been already published. Altogether we have tried to render educational research in the college and university field a respectable and inviting enterprise for college faculties to engage in. It is our hope that we may also have added something to the body of knowledge upon which the procedures of higher education should be founded.

M. E. HAGGERTY,
Dean of the College of Education.

The Work of the Committee of Seven

For a number of years the University of Minnesota has been studying the problems relating to student personnel, with particular attention to the problem of educational guidance and the factors affecting retention and the degree of success of students in the university. In 1922 President Coffman appointed a Committee on Educational Guidance, of which Dean Haggerty of the College of Education was chairman, to consider the problems of educational guidance with special reference to the means of guiding students in their choices of the professions which they sought to enter. In its report this committee proposed that there be held a joint conference on educational guidance, composed of members of the faculty of the university, administrators of secondary schools, superintendents of public school systems and representatives of vocations and students of social problems.

Such an educational guidance conference was held in the spring of 1924. The many points of contact between the university and the secondary schools of the state and the similarity of the problems with which both institutions were confronted became so evident during the conference that President Coffman proposed that there be appointed a joint committee representing the university, the State Department of Education and the Administrative Division of the M. E. A., to visit the university and to study the problems of the relation of the university and the secondary schools, the work of the committee to be financed by the university. This proposal was endorsed by the conference and the Committee of Seven was appointed. The members of the committee were Supt. J. C. West of Bemidji, Supt. J. P. Vaughn of Chisholm, Miss Elizabeth Clark, Principal of the Technical High School of St. Cloud; Mr. J. E. Marshall, Principal of Central High School, St. Paul; Miss Marie Lange, Teacher in the high school of Mankato; Mr. E. M. Phillips, State

Inspector of High School, St. Paul; and the Principal of the University High School, University of Minnesota.

When the committee began its study of the various aspects of the relations of the secondary schools and the university it was somewhat overwhelmed by the size and the complexity of the problems confronting it. Its reactions were very similar to those of the boy who on a cold morning endeavors to lick the frost off the pump. It was evident at once that the committee would have to make a selection from the mass of problems before it of the special ones to which it would give its attention. The situation was rendered more difficult by the fact that members of the committee lived in different cities, making it necessary to carry on most of its work by correspondence, and by the fact that only one member was in a position to be in close contact with the university.

To aid it in determining what problems it should endeavor to study the committee set up the following criteria:

1. It was agreed that to avoid duplication of effort, problems which were already being investigated by some other agency of the university should not be studied by the committee. This immediately eliminated such problems as the efficiency of instruction in large size classes, the marking system, etc., which are being investigated by the Committee on Educational Research in the university under the chairmanship of Dean Haggerty.

2. It was agreed that problems with which no member of the committee had had personal contact or experience or for whose investigation no member of the committee had the requisite training should not be studied. This eliminated the problems of the character and quality of instruction in the university. No member of the committee had had experience in teaching on this level nor did any member feel competent to set up criteria or to attempt to develop objective standards for measuring the results of such instruction. The committee regretted the fact that it did not feel it could undertake to study this problem because it believed that there is no aspect of education which would yield richer returns than this.

3. It was agreed that the studies of the committee should be based upon objective data. The committee felt that its conclusions could have validity only as they were based upon factual evidence. In this work the committee did seek the opinions of many people both on the university campus and throughout the public schools of the state, but whenever it referred to such statements in its report it has endeavored clearly to indicate that these are opinions only.

Using these standards as its basis, the committee finally agreed upon five problems relating to the secondary schoo and the university which it endeavored to investigate. These were: First, an attempt to study the selective factors which controlled the entrance of high school graduates into the university. Second, a quantitative study of the preparation of high school graduates for entrance into the various colleges. Third, a study of the guidance programs of the secondary schools and the university. Fourth, an attempt to gather information concerning various factors in the university which contribute to student success, particularly in the freshman year. And fifth, a study of the reaction of eliminated freshmen to the university, its methods and its teaching staff.

The methods used by the committee in gathering the data relating to the problems were of three types. The first was the questionnaire. This was used in part in three of the studies, the one relating to the factors controlling the selection of university entrants, the study of the methods of guidance in high schools and the study of the reaction of eliminants to the university. Every endeavor was made to make the answers to the questions statements of fact. Though not entirely successful, the committee feels that it succeeded largely in attaining its object, the questionnaire sent to the eliminated freshmen being least satisfactory from this standpoint. Checks between various parts of the questionnaires show that the answers made were honest and accurate.

The second method of obtaining information was that of gathering the facts directly from the records of the high schools, the State Department of Education or the university.

This method gave the committee the facts so far as the records went. It was in some instances, as in studying the methods of guidance in vogue at the university, supplemented by personal interviews.

The third source of data was the use of studies made by various members of the university faculty. Every member of the university staff gave the committee complete access to all the materials of any study he had made or was making. Needless to say the committee borrowed freely from many of these studies. This uniform courtesy and cooperation on the part of the university faculty saved the committee many hours of labor and gave it much needed information.

It is not the purpose of this paper to report in detail the results of the various studies made by the Committee of Seven. It may, however, be of interest to present a general description of the studies and the conclusions the committee believes are the most significant.

The study of the factors affecting selection was made largely by means of a questionnaire which was answered by all the students of all four classes of the Colleges of Education and Engineering and the freshmen and sophomore classes of the College of Science, Literature and Arts. These three colleges admit high school graduates as freshmen. A total of over 3,750 useable questionnaires was obtained. From these the committee tabulated information concerning the entrance and retention of students in the university as affected by the following factors:

1. The nationality of the father.
2. The size of the family.
3. The order of birth of the children.
4. The education of the father and mother.
5. The death of either or both parents.
6. The economic status of the home as indicated by:
   (*a*) The father's occupation.
   (*b*) The income of the father.
   (*c*) The employment of the mother.

In addition a tabulation was made from the university records of the place of residence and of the sex of the students to

determine the effect of those factors upon entrance and retention; and finally the committee used a study of Dean Johnston's showing the relation between scholastic rank in the high school graduating classes in Minneapolis and St. Paul and entrance into the College of Science, Literature and Arts, and a study made by Professor Paterson showing the relation between the levels of intelligence in the graduating classes of the St. Paul high schools, as measured by psychological tests, and entrance into the university.

The outstanding conclusion of the study of the factors that control the selection of the high school graduates who enter the university is that such selection is sociological in its nature first; second, it is based upon the biological accident of sex; and third, that intelligence, as measured by psychological tests, and scholastic achievement in high school as measured by scholastic rank in the high school graduating classes, are relatively unimportant factors in determining who shall enter the university. The factors which operate in the selection of students for university entrance are not superiority in intelligence nor in scholastic achievement in high school, and probably these have not been the dominating factors of selection in many decades if they ever were, though there is no objective evidence to support this latter statement. The proximity to the university of the student's residence, the occupational status and nativity of his father, the influence of such conditions in the home as parent's mortality, and similar factors are those which are most powerful in determining whether or not he shall enter the university. The influence of sex is more powerful than appears from the data reported, since the men, who enter even such colleges as Science, Literature and Arts, in far larger proportions than women, are in the minority in the number of graduates from the high schools of the state. The obvious conclusions from these facts are first, that many students of better than average ability are not now entering the university because of the operation of the factors of selection; second, that many students are entering the university who cannot achieve successfully upon the present level of higher education; third, that either because the present types of higher education do not meet their needs or because of the influence of other selective factors outside the university, women are not entering the university in the numbers that should be expected.

The meaning of the first of these conclusions for the high schools and the university seems clear. Every effort must be made by both institutions to overcome the effect of the factors of selection which are keeping out of the university the superior student, who presumably can profit most by advanced education, in order that he may receive the values

accruing from further education and thereby become more useful to society. What is to be done for those of lesser ability who are not good college risks upon the present level of advanced education but who are entering the university in large numbers is not so clear. Two solutions are possible. First, objective means for predicting the success of students in advanced education may be perfected and then those who will be unsuccessful may be guided away from further education into fields where they will be successful, thus saving them and the state loss of money, time and misdirected effort. The second solution is the organization of courses which they can pursue with profit upon levels of education beyond the present secondary school but different from the level of higher education now in vogue. This latter proposal would mean a reorganization of much of our present educational system. The beginnings of such a reorganization are now in existence in the university and in other institutions of higher learning in the state. In the opinion of the committee this is the proper solution of this problem.

The solution of the problem of education for women is not clear. If the smaller proportions of this sex who enter higher education is due to factors of selection outside the university, these must be discovered and their effect overcome by education and guidance. If it is due to failure to offer types of advanced education which will meet their needs and vocational opportunities, then such courses must be instituted. The committee believes that both the above factors enter into the problem. In any case further study is needed to determine the solution.

The second study attempted by the committee was that of endeavoring to determine the preparation made by high school graduates for college entrance. This study dealt with the subjects taken in high school by college entrants. Such a study should be qualitative in character but, since the committee had no objective measures of the achievements of high school graduates in the various subjects, it was forced to rely upon a quantitative study of the number of units of credit in the different high school subjects, or subject groups, offered for university entrance.

The students whose high school records were studied were chosen in alphabetical order, the first group being composed of 736 freshmen who entered the College of Science, Literature and Arts, in October, 1924. Of this group 403 were men and 333 were women; 416 came from high schools of the Twin Cities and 320 came from high schools out in the state. A second group was composed of 140 men from the College of Engineering.

The number of units of credit taken for high school graduation in any subject group will be affected by the curriculum prescriptions made by the high schools from which the pupils graduated. Consequently the committee included in this study an investigation of the curriculum prescriptions of the high schools of the state, classifying them according to size. In studying the units of credit offered by the students for university entrance, the students were classified according to sex, to the size of the high school from which they graduated and according to their levels of intelligence as indicated by psychological tests.

The part of the study dealing with curriculum prescriptions revealed the fact that there is a distinct tendency for these prescriptions to increase in number as the high schools decrease in size. To illustrate, the large high schools of Minneapolis prescribe only 5½ units of high school work. In high schools of 10 teachers or less the median prescription is 10 units, the range being from 6 units to 14 units. Since curriculum prescriptions are a form of enforced educational guidance the implication of these requirements from the standpoint of secondary education and their effect upon the preparation of high school students for college appear obvious. The committee believes that there was clear evidence that the character of the preparation of students in the high schools of Minnesota for university entrance was determined largely by the size of the high school they attended. While the high schools of approximately the same size vary somewhat among themselves, the similarities within one group are far greater than the differences. On the other hand, the differences between the groups of high schools of different sizes are very marked. For example, the median offering in science in the Twin City high schools is one unit. In the small high schools of the state it is 2½ units. Equally marked variations are to be noted in every other subject. Higher education must recognize these wide differences in the quantity of work taken in different fields of work by students from high schools of different sizes.

Another fact noted by the committee in this study of the

units of credit in high school subjects offered for university entrance is that there is a distinct tendency for students to make contacts with all fields of learning. The university requires that 11 units of work in the traditional college preparatory subjects must be offered for entrance. In general high school students exceeded this requirement by 1 or 2 units; but they also tended to offer from 1 to 3 units of work in the so-called nonacademic or vocational subjects. Regardless of the degree of election permitted high school students in their work, the tendencies just noted were found. It was the opinion of the committee that this fact indicated an attempt, more or less conscious, for high school students to try out their abilities and interests in different fields and to adapt their educational choices to their interests, needs and capacities. Comparison of groups of students by sex and by mental ability indicated clearly that freedom of election in high school subjects was used by the students for this purpose, that the freedom granted them was not abused, that the choices made by the different groups were distinctly different and that there was no apparent attempt to choose "snap" courses or to overspecialize in high school.

The significance of this study is that it presents the facts concerning the variations in the preparation made for college entrance, in the variations in curriculum prescriptions in high school and in the use made by students of their powers of election in high school. It suggests that the university must recognize the differences in the preparation of students coming from high schools of different sizes and suggests that both high schools and university should join in a study of curriculum prescriptions and of high school preparation as related to the degree of success of the students in their university work.

The third study undertaken by the committee was that of the educational guidance programs of the high schools and the university. The data for this study were gathered from the high schools by a questionnaire; that for the university from the university records by personal study of the program and by personal interviews. The conclusions of the committee were that—

while a few individual high schools, such as that at St. Cloud, have organized and are experimenting with systematic programs of educational guidance, the study of the situation in the high schools of the state indicates that in most high schools educational guidance is unorganized. In general, guidance grows from the personal contacts of teachers and students, from casual or incidental contacts of students in their regular classes with materials that may be of value in guidance and from personal conferences with individuals growing out of student's questions. In all schools there appear to be greater or less bodies of information concerning students, their history, their abilities, capacities and interests, but the high schools in general have not made use of this material. The high schools are apparently awake to the need for educational guidance, but for various reasons the majority do not appear to have instituted any definite or systematic plan. The frequency of the request for assistance opens to the university an opportunity to render large service to secondary education by aiding the high schools to study the problem and to institute programs and experiments in educational guidance.

The program of guidance in the university is broad in its scope, involving psychological tests, personal information and history, counselors trained by the university, physical examination, mental hygiene, orientation courses, and other means of acquiring information concerning students and for adjusting them to their environment and their objectives in life. No high school in the state approaches the university in the comprehensiveness of its guidance program. The committee has no criticism to offer, its only suggestion being that the university consider the wisdom and desirability of reorganizing the freshman year, in part at least, so that it might become more of an orientation year. This proposal would involve a reorganization of the courses of this year.

The fourth part of the committee's report dealt with factors affecting the success of students in the university. This section was not an original study by the committee but was a compilation of the available data from studies being made by members of the university faculty of the influence of such factors as *intelligence as conditioning success*, size of classes, methods of instruction, methods of measuring student achievement, the reliability and validity of marks assigned to students, the complexity of student life as affecting success and similar problems. It was the belief of the committee that the university is keenly aware of its problems and that through various agencies and individuals it is attacking these problems in a thorough-going, scientific

spirit. No high school in Minnesota of which the committee has knowledge is attacking its problems in as scientific and thorough a way as is the university.

The fifth study undertaken by the committee was to determine the reactions of eliminated freshmen to the university. This was attempted by a questionnaire which was sent to 514 students of whom 198 returned useable answers. In this study the committee endeavored to ascertain the reaction to these eliminated students to such aspects of the university as the methods of instruction, the attitudes of university instructors toward students and similar matters. The significant fact is that the answers obtained by the committee are in general not unfavorable to the university, with the marked exception of the replies to the questions on the attitudes of instructors toward students. These answers indicated that, as compared to high school instructors, these eliminated students believe university instructors are less friendly, less patient, and less sympathetic but are equally democratic.

The committee does not accept these answers at their face value. It believes that a number of factors tend to color the students judgments. However, the significant fact to the committee is that these are the reactions obtained to this type of question. In the opinion of the committee, this is a problem which merits the most serious study by the university.

These five studies which are here briefly and inadequately summarized represent the work of the Committee of Seven. The committee recognizes that no one of these studies is finally conclusive; in fact it did not at any time entertain the hope that it would find a final answer to any of these problems. It presented its report with the hope that it would be informative. In the opinion of the committee the significance of its report lies, first, in the fact that these studies represent an attempt by representatives of the university, the secondary schools and the State Department of Education to study the joint problems of the secondary schools and the university. Second, in the fact that an attempt was made to base the conclusions of the committee upon objective

data rather than opinion. Third, in the hope that the conclusions drawn from the studies and the suggestions and proposals made will stimulate discussion, experiment and further study. The committee feels that the most valuable contribution it could make will be to have such outcomes result from its report. It believes that similar committees should be appointed both at Minnesota and at other universities to carry forward further studies of the joint problems of the secondary schools and higher education.

Finally, I believe I can best present the spirit of the report and the point of view of the committee if I quote the concluding paragraphs of its report.

> The university and the high schools form the two upper divisions of the system of public education in Minnesota. Both are supported by public moneys. Both are charged with the responsibility for educating those children of the public which enter their doors.
>
> The philosophy which underlies the system of public elementary schools is the education of all the children of all the people. As the secondary school system has developed the thought of the people and of the educators has been based upon the same philosophy and the goal has been universal secondary education. Far as we are from it today, the last three decades have witnessed great strides toward it. Larger proportions of children are entering and graduating from high school than ever before. As the numbers of graduates from our high schools have increased there has been a parallel increase in the numbers entering the university, especially in the last eight or ten years. The university has felt the pressure of numbers, has found new problems arising from them, and an increased emphasis on old problems. It has felt that large numbers of these new entrants did not possess the ability necessary to do work successfully on the university level. It has observed large numbers of its entrants being eliminated in the first two years.
>
> The problem the university is meeting is the same the high schools have long faced, with this difference, that the compulsory education law requires the high school to care for its students until they are sixteen years of age. The high schools have attempted to meet the problems by enlarging and enriching its curriculum and by striving to adapt its education to the abilities and needs of the students who enter it. Undoubtedly the secondary school will continue to receive still larger proportions of the adolescent children and high school education will become more nearly universal than it is today.
>
> But the fact must be recognized that the abilities of individuals are different. It is evident that at some point a selection, based on ability, must enter in. The question is where and under what conditions.

What is the intelligence level needed to complete secondary education? Or to enter and pursue higher education successfully? This committee knows of no answer to these questions.

That higher education must be selective cannot be denied. The scientists, physicians, engineers and skilled professional men and research workers must be those possessed of superior intelligence and of the willingness to work. Colleges must seek out those high school graduates of superior ability to educate them for those opportunities, and high schools must aid in this selection of the superior. But the increasing numbers of graduates of our high schools who, regardless of their ability, are seeking admission to our universities will continue to make more acute the problem of selection. The committee believes that the limit below which success in higher education is impossible is not yet reached. As universities study their methods of instruction and the means of measuring student achievement, and as they justify the values of the content of their courses and curricula, larger numbers of students who now appear to be of an intelligence level too low to succeed in college work will be found to be pursuing higher education with success.

But improvement of teaching methods is not the only nor the final answer to the question of selection. The numbers of students of inferior ability seeking further education will still be large. The committee believes that public education cannot ignore these students. Nor is it an answer to the problem to allow them to fail in the university. The solution of this problem appears to be a scientific attack upon the problem of education beyond the present four-year high school. An effort must be made to discover the types of vocations, semi-professional and business, for which such individuals can be educated. The values in literature, history and social science, science, mathematics and other fields which they can attain must be sought out. And from these materials there must be organized a type of education which will be suited to the abilities and the needs of these individuals. No other solution to this problem can conform to the ideals of democracy in education, of equal educational opportunity for all.

The problems of education upon the level of the secondary schools or the university have much similarity. Each institution is dealing with the problems of selection, of retention and elimination, of individual differences, of the methods of instruction and of measurement of achievement and their improvement and the problems of guidance and adjustment. The differences are only in degree, not in kind. They are old problems yet are perennially new. The high schools and the University must continue their cordial cooperation in the study of these problems with the hope that out of such study, experiment and debate will rise the means of solving them.

CHARLES W. BOARDMAN,
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Predicting College Achievement as a Basis for Educational Guidance

The mode of treatment of the topic assigned for this paper is determined partly by the statement in the program that this evening is intended to be "descriptive of personnel administration and research at the University of Minnesota."

In very few words the story of our efforts to find a rational and reliable basis for educational guidance (for all selection, admission requirements, etc., are phases of educational guidance) is as follows:

For many years we had as an entrance requirement a certain standing in the high school, expressed in marks. The reliability of this was questioned, and through the efforts of President Vincent in 1913–14 the rule was abandoned. In 1914–15 a study of the college records of those who would have been refused admission under the old rule showed that the rule kept out of college some students who would have failed and a larger number who would have made satisfactory records.

In 1915–16 I called attention to the mental tests which were then developing as giving hope of placing student selection on a sound basis: Conferences were held between university faculty representatives and the Schoolmen's Committee on University Entrance Requirements and a program of investigation was agreed on, to be carried out by the university with the moral support of the schoolmen's committee.

In 1917, since the university had given leave of absence to Professor Yerkes for psychological research work in the Army, we secured through his help a supply of the Army Alpha tests and were the first institution to use these. A program of testing was carried out under the direction of Professor Haggerty, from which our faculty gained some valuable information and some interest in and respect for psychological testing.

In 1919 and 1920 tests were given to liberal arts freshmen

under the direction of Professors Miller and Van Wagenen. Beginning with the fall of 1921, Professor Paterson took charge of the testing of freshmen for the College of Liberal Arts. In later years the Colleges of Engineering and Architecture and of Agriculture, Forestry and Home Economics have had their freshmen take the same tests. Next fall, with the inauguration of a full "Freshman Week" plan, the tests will be given to all newly entering students, whether freshmen or advanced standing students, in all schools of the university.

The tests used have been assembled under Professor Paterson's direction. They have included tests from different sources, one of the most valuable being Moore's completion test. Each year the scores on each test have been compared with the records of the students in college work, and the battery of tests has been revised by throwing out those which proved least valuable and trying new tests. The resulting collection of tests tried out in this way against college work has necessarily become a special genus of psychological tests which should bear the name "college ability" tests. A new set of tests has just been printed, based on the experience of the past five years. These tests have been so prepared that alternative lists of questions can be given from time to time without altering the difficulty or validity of the tests as a whole.

While these tests have been developing the problem of educational guidance has been studied. Beginning in 1914, we carried out a number of experiments for the organization of faculty advising. From our experience I am convinced that this work requires the combination of expert technique—psychological and social—with representation from among regular teaching faculty members. In so far as the expert technique is found in the faculty members, so much the better. Since 1922 Professor Paterson (as chairman) and a growing group of faculty members, numbering now about twenty-six, have been doing excellent work in counselling and guidance. Only a little of the results of their work has been published because of the danger of betraying confi-

dence. As to the organization of this work, I may say that we cannot put it all into the hands of experts because there are not enough psychologists to handle the crowds of students now coming to our state universities, and we have other things for psychologists to do. Moreover, it is of the greatest importance that educational guidance be understood by the faculty and that the faculty do its share of the work. Finally, it is necessary that educational guides shall be able to draw on the whole range of knowledge in every field represented by the faculty. In this connection mention should be made of the orientation course, which is of the highest value in directing the intellectual life of the student.

Educational guidance is nothing if the students have not the possibility of classification with respect to their qualities, abilities and aptitudes and the opportunity of electing between differentiated courses of study with respect to their objectives and the demands of their lives. The purpose of educational guidance is to help the student to select the objective and kind of work for which he is best fitted by native endowment, but if the educational organization does not enable us to put our facilities at his disposal the guidance is of only occasional and slight value. The very heart and core of our situation lies in our ability to classify our students and to direct them into the kinds of schools, curricula or occupations best suited to them.

This involves us in the consideration of two things quite above and beyond the everyday practice of student advising: selection and classification on the one hand and differential instruction on the other. It is to the first of these questions that the topic assigned me directs our attention, and I shall give only brief consideration to the second in its proper connection.

While I have had some administrative responsibility for other things that have been done, my special interest in personnel work at Minnesota has centered in the attempt to find a basis for selection and classification of students not in the mass but as individuals. Of course we collect much of our information in the mass, but the interpretations drawn

and the rules of procedure which affect the student's opportunities for education must be such as not to do injustice to individuals. No matter how much good you do to the large number, if you work injustice to more than a very, very few individuals, the American democracy will demand that you go slow and let Nature take her wasteful course.

To find a basis for selection and classification is purely a piece of scientific investigation. It differs in no essential way from investigation in biology or economics. The administrative problem is peculiarly a human problem, and for its solution it demands beyond the results of the purely scientific investigation a fund of sympathy for the common man and a fund of common sense for the factors in the situation.

The dominating factors in the situation are these. Modern industrial society allows its members increasing leisure time and surplus wealth. Youths are able to remain longer in school. More youths are able to undertake college work. There is an increased interest in education as a means of advancement, socially and financially. Since 1870 the whole public school system of the country has grown up. The high schools now enroll 3,400,000 pupils. Since 1900 collegiate enrollment has doubled each decade. We are evidently in the midst of a period of growth corresponding to that of the high schools. This growth is a continuation of an irresistible social movement which led first to the development of high schools. The tide of students coming up for higher education is as irresistible as the ocean tide that laughed at Mrs. Partridge's broom, or as the pressure of the northern hordes who moved into ancient Rome to enjoy the advantages of its higher civilization.

The students who come to college today are, intellectually, nearly a random sampling of the high school pupils. Many of the most capable do not come, while many who are lacking in capacity do come. Morally these students seem to me, in comparison with those of thirty years ago, a little less actuated by the long purpose, by ideals. They are a little more interested in the direct advantage, vocational or

other. They are free from old traditions and not bound by new clearly defined purposes. In numbers the students coming to college now represent nearly three times as large a part of the population as was the case twenty years ago.

These facts mean that we are in the midst of a social revolution of major importance, and it is utterly futile for us to meet in our committee rooms and talk about curricula in our own colleges unless we have first lifted ourselves above the earth and secured a view of the general situation. The significant problem is not the curriculum of our own school or any particular problem of instruction or administration in our own school, but it is the relation between this stupendous number of young people seeking higher education and the curricula, the instruction and the administration in all the different kinds of schools. We must put the very character of our own institutions on the table as a part of the problem.

If we were dealing with material things, with lumber or metals or clay, it would not be necessary to say that we should classify and sort and treat these things according to the character of the raw materials. A smelting company handling different grades of iron ore or a textile manufacturer handling different grades of wool or of cotton would laugh at you if you asked him whether it was necessary or advisable to examine and sort his materials before sending them into the factory processes. It is not enough to say that human lives are more valuable and that it is correspondingly more important to sort and classify at successive stages of education. What is practical and sensible to do is to accept the analogy provisionally and proceed with experimental studies to see whether we *can* intelligently and reliably classify our students with respect to their innate qualities, abilities and aptitudes and with respect to their objectives.

Endowed institutions have been selecting their students for several years, but, if anyone thinks that the main function of the personnel workers assembled here is to protect Harvard, Yale, Columbia or Stanford University or Dartmouth, Smith, Grinnel or Mills College against the entrance

of undesirable students, he has fallen far short of understanding the service and the duty which a developing democracy expects from you. The problem is what shall an intelligent democracy do with and for the whole body of youth who wish to spend some time in educational activity after graduation from the high school. The exercise by the endowed institutions of their prerogative to admit only those who come through the cream spout of their type of separator goes only a little way toward solving the nation's problem of educational guidance. It does not tell us what to do with those who are rejected, nor with those who do not offer themselves as candidates for admission, although they are the equals in capacity of those who are accepted. It is necessary for us, on behalf of the nation, to look at the problem whole. The state universities, more than any other institutions, have this duty laid on them.

Not only is the selective admission by endowed institutions a partial solution, but the prediction of college ability in general is by itself not enough. Many youths who wish more schooling beyond the high school do not wish to go to college, or if they are unfitted to go to college the college ability test will not tell them where they should go. Fortunately, however, the public school system has been developing elaborate testing and guidance machinery, and the cooperation of high schools, colleges and other schools should meet the problem as a whole. At the point of transition from high school to state university the practice of selection is eliminated. In the matter of admission the state universities are still making the assumption that the chief function of the high school is to prepare students for college. In fact, only a small part of high school graduates go to college, and the chief labor of high schools is to prepare young people for their occupations in life. There is need of a clear understanding between high school and university in this matter in order that the two may join in giving to young people sound advice about going to college.

Our immediate contribution should include reliable means of measuring: (1) College ability on the freshman and sopho-

more levels, (2) outstanding or superior ability in general, and (3) special abilities or aptitudes, as for the study of medicine, law or engineering. We shall not have time to discuss the third point in this paper. If we can recognize those persons who can profit by training in college and can distinguish those who will prove to be superior students, we shall be able to do a great deal in intelligent and useful educational guidance.

Individual differences are not a modern invention or a discovery of present-day psychologists. When Jacob was outwitted by his father-in-law he considered Rachael enough better than Leah that he was willing to work a second seven years to obtain her. And recent excavations in Ur of the Chaldees, from which his grandfather Abraham came, show that for thousands of years before a highly organized society was based on individual differences. Indeed, if we were not speaking under the very eaves of the citadel of fundamentalism, it would be easy to remind you that individual differences did not even arise first with the human race but were one of the fundamental conditions antecedent to the rise of the human race above its animal ancestors.

We have too long dwelt upon the common characters which make us all members of the human race. These are accomplished facts, and we need not worry about them. What is really important to us is the fact that individuals differ from one another in every one of these common characters, and that these differences constitute the sole ground for the organization of society and the sole means by which individuals can find their places in the organization. Thus far we have proceeded on the *laissez faire* principle, under which individuals find their places by ambition and competition and fighting, and there has been tremendous waste and suffering. Surely, if human society has not yet developed to the point where it can be directed in general by intelligence and reason, we have a right to attempt this in the field of higher education, at least.

Since individual differences exist in all known human characters, and since education has to do with all of man's

qualities and activities, the prediction of capacity for higher education will be most successful and just if based on wide knowledge of the student's qualities. If you are asked to describe a monument or to estimate the value of a tree, you can do it better if at least you walk all around the object and view it from all sides. This is the first common-sense principle for the prediction of capacity for education. From the very start we have aimed to secure information about the student from many points of view. Valuable sources of information are the proportion of elementary and advanced studies elected in the high school, activities participated in during the high school years, the student's interests, ratings by principals or teachers, examinations in English. Not all of the data investigated have yet been brought into the form of standardized measures.

We have brought to practical completion the study of two measures which, combined, give very satisfactory results with the Twin City high school graduates. These measures are the high school record and the college ability tests. Since the methods and results have been fully published, I will not weary you with a recital of them, but shall only point out some of the elements or factors involved.

The high school achievement measures in greater or less degree intellectual ability and also moral ability—i.e., those character factors such as application, industry, clearness of purpose, vigor, and so forth, which are important elements in success. The college ability tests are experimental measures of aptitude for college work. The use of either of these two measures alone in prediction results in a considerable error. The combination of the two measures eliminates most of the errors. This experimental fact alone is proof that these two sets of data measure different factors which make for success in college, and that an institution which bases admission on either one alone is neglecting an important means of educational guidance.

Aside from the combination of these two measures in one rating scale the comparison of the two ratings enables us to take account of habits and attitudes and to use these for

extending the prediction or making it more accurate. The case of the student of relatively high native ability who has loafed in the high school can be discovered; the case of the student of relatively low native ability who has made a good record in the high school by hard work; the case of the student of low ability who has made a low record in high school, and so on.

What we have been able to do by these methods may be summarized as follows: In the way of predicting lack of ability for satisfactory college work as now conducted, we have pointed out individuals to the number of 20 to 25 per cent of the groups studied with an error of less than 1 per cent of the total group. The results have been tested in different classes by one year, two years, and four years of college work. The number of predictions of unsatisfactory work is equal to one-half of those who ultimately do unsatisfactory work. Further refinements of this method which have not been proved over as long periods seem to enable us to increase the number of correct predictions very materially, perhaps to two-thirds or three-fourths of the eventual number of unsatisfactory students.

In the matter of predicting capacity for high scholarship it is possible to select a group of students among whom will appear nearly all those who will attain an average standing of B in all their work. When this is done some months before the students come to college, it may be made a strong incentive or encouragement to undertake college work. It also makes it possible for the faculty advisers to know what kind of attention to give to this type of student in order to stimulate him to achieve up to his capacity. Capacity achievement for every student, not only in grade getting but in all things that are worth while, is one of the chief objects of educational guidance.

Work now in progress shows that these same combined ratings can be employed profitably in relation to particular subjects of study, in sectioning classes on the basis of ability, in advising students whether they can hope to succeed in a given subject, and so on.

How can results such as these be made useful to the public?

In the University of Minnesota about 52 per cent of students who enter the College of Liberal Arts as freshmen eventually graduate from some college or school of the university. Thirty per cent of the freshmen leave college before the sophomore year, and about 44 per cent leave before the junior year. Students leave college for a great variety of reasons or combinations of circumstances. A student who is doing poorly in his studies, or who has failed to make a fraternity or an athletic team, will feel financial stress more keenly than one who is successful and enthusiastic in his work.

Students who are lacking in qualities of studentship which we can examine and measure, students who for this reason are unable to pursue a four-year college course or a professional course profitably, students who will find the usual type of college curriculum unsuited to their needs, students whose proper care would require drastic remodeling of the curriculum, methods of instruction and administration in the present-day college—these students number between 30 and 40 per cent of all entering freshmen. A general proof that this is not an overestimate is found in the fact that by our present methods we can point out in advance many unsatisfactory students with very slight error.

If we could give this prediction to pupils and their parents two or three months before time for registration in college, we should find a considerable number of students accepting this form of educational guidance. We tried this in the Twin Cities a year ago with very obvious results in selection, although these results were naturally small in volume at this first trial. Physical conditions make it impossible to carry this out through the whole territory from which we draw students. Eventually, however, one of our aims—not the aim of the university, but the aim of the educational leaders of the country—must be to save these young people who are unfitted for college the loss of time and money and the discouragement which is their only fate under present conditions. To say that we must let these people come to college

and suffer defeat and failure without trying to help them is to wash our hands of a responsibility which no one else but university men are now able to meet, it is a denial of social progress, it is an expression of pessimism and an acceptance of brutal competition as nature's only means of finding the place of individuals in a social organization. I use this strong language because nowhere in state universities is anything worth while being done to meet this responsibility.

On the other hand, there is need of further cooperation between higher institutions and the secondary schools. If we turn away from college by any method those who would only fail and suffer loss and discouragement, we have done these youths only a negative service. The positive side for those who are not fitted for college must be furnished by agencies of personnel study and guidance in the secondary schools. These agencies must guide such youths into schools or occupations better suited to their needs.

We are led thus, step by step, to a brief consideration of what educational guidance means on the side of curriculum building. It means in general that curricula must be built for objectives, as professional school curricula are built for definite objectives, that students must choose their objectives in the light of their abilities and aptitudes, and that the student must then be directed into that curriculum which leads to his objective. I shall not stop to discuss the bewildering conflict that is going on in the colleges, because a few years ago their objectives were supposed to be clearly defined in the minds of their faculties, whereas now the functions demanded of them have come to be something very different on account of the changed social and industrial conditions already referred to, and the growth and differentiation of professional schools. The whole question of educational objectives needs to be restudied, and the study must lead to a classification of the objectives of different schools and to a clearly recognized division of labor between higher institutions.

What will happen in educational organization will be determined by the needs of society, which can be met by train-

ing in schools. First of all there is need for a wide range of studies essentially on the secondary level. These are needed to occupy profitably the time of the large body of students who wish to remain in school to the age of eighteen or nineteen years. They are needed for rounding out information, for vocational, commercial, trade and artistic training, for the creation of an educated class—as large as may be—possessed of information and prepared to meet with intelligence the duties and opportunities of their lives. A large amount of such instruction is already offered in high schools —so that many pupils might profitably remain a year or two in the high schools of their cities after graduation—and in junior colleges comected with high schools or independently supported. The chief needs are a further development of vocational and trade high schools in cities large enough to support them and the development of a system of junior colleges with local and state support.

A second need is for vocational and semi-professional training, which requires more than two years beyond the high school or requires special conditions not found in every community. This training can be given in part in junior colleges and small colleges but must be finished largely in the better equipped colleges or universities.

A third need is for technical, professional and scholarly training. This can be offered successfully only in the last two years of the best equipped colleges and in universities and graduate schools. Preparation for and admission to this instruction requires active selection and guidance during the freshman and sophomore years. For this reason it is wise to provide in the colleges and universities the freshman and sophomore instruction for those students who are capable of completing collegiate or professional training. Careful attention must be given to the types of students to be admitted to the college or university in relation to the curricula or forms of training that are provided in any given institution. These things will differ from institution to institution and in different places. An institution situated in a large city may include curricula of general information and vocational

training for students who will never go beyond the junior college level, while institutions situated in a small village might find such curricula wholly inappropriate.

This brings us back to our program of prediction, of selection and of educational guidance. The means of discovering abilities and aptitudes should be provided for all communities in order that sound educational guidance may be available for all youth everywhere. This is our goal. Boys and girls whose inheritance or mental ability and moral character has destined them for high things must be discovered and advised and directed to the ends that they may find full satisfaction in their lives and that society shall enjoy full advantage of their powers of investigation, of creation, or of leadership. Boys and girls of special aptitudes—mechanical or artistic skills, salesmanship or what not—should be guided for similar reasons into the occupations or the schools in which their talents will find development and expression. Boys and girls of less marked mental ability, as long as they wish to continue their studies, should find schools prepared to give them information, together with trade or vocational training to fit them for useful lives and the intelligent discharge of the duties of citizenship.

These things can be brought about only by educational measurements and educational guidance, unless we are satisfied with the slower and more painful methods of the cave and the jungle. We have risen from the life of the cave and the jungle by improving, from generation to generation, our technique of social adjustment and of functional placement of the individual in society. The methods of educational measurement and guidance now being developed provide the means for a very pronounced new advance. It is necessary, however, that they be devised and appraised in the light of the problem of social adjustment as a whole.

It may be worth while to sketch in barest outline some of the practical proposals that may be considered by state universities. If we are to go on with some program of educational guidance, I would suggest first the holding of examinations in June in all sections of the state for the pur-

pose of rating students, of advising them as to their prospects of success in college or professional school, and of giving them the full benefit of all forms of vocational and educational guidance which the studies and experience of personnel workers have rendered available and shown to be reliable. The way in which this would enable the university to increase its positive service to the state would be by the encouragement of a larger number of the more capable students to enter the university.

Second, I would organize cooperation between the university and the advisers of students in the high schools, not only to secure the cooperation of the high schools in selection of students for the university but much more to help the high schools to guide intelligently those students who should go into other schools or directly into occupations.

Third, I would secure the means of offering freshman scholarships to high school graduates who give the highest promise of becoming unusually capable students, the selection to be made on the basis of tests, scholarship record, interviews and all available information. I would give such scholarships to promising students who would not be able otherwise to come to college, and I would make the scholarship large enough in each case to make attendance possible. Such a system of scholarships—say fifty of them each year—would directly increase the number of capable students coming to the university, would call attention in a striking way to the possibility of guidance in advance, and would indirectly give great encouragement and stimulation to other capable students to go to college.

Finally, through the cooperation with the advisers of students in high school and through special announcements to the parents of students whom our examinations show to be most promising, and through the advice given to freshmen, I would bring forcefully to the attention of parents and pupils the opportunities offered by scholarships, loan funds, and self-support as encouragements to the capable students to continue their higher education.

The giving of such advice does not destroy individual

initiative and choice in respect to college attendance. What it does is to give to young people and their parents more information and better information than they have ever had before upon which to base their judgments.

In a word, I would inaugurate and carry through a campaign which would be wholly a help and an unselfish service to the public, whose object would be to give to all every form of advice and guidance possible or that may become possible, and in every way to encourage the more capable students to go to college and to prepare themselves for the higher forms of public service in which the nation very seriously needs their best efforts.

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